ENVIRONMENTAL STUDIES PROGRAM: Ongoing Studies

Region: Headquarters

Planning Area(s): Western, Central and Eastern Gulf of Mexico

Title: Update to the BOEM Oil Spill Risk Analysis (OSRA) Model: Applying Lagrangian Stochastic Model to Track Oil Spills

BOEM Cost: $194,992 **Period of Performance:** FY 2011-2013

Conducting Organization(s): University of Miami (M11PC00034)

BOEM Contact: Zhen Li

Description:
Background:

- Oil Spill Risk Analysis (OSRA) is an important tool for evaluating impacts of potential oil spills in the Outer Continental oil and gas leasing areas to prepare the Environmental Impact Statement (EIS), and for evaluating mitigation, such as oil spill contingency plans.

- BOEM has decided to improve the estimate of the contact probability of potential oil spills from proposed oil and gas leasing areas by seeking an alternative approach, namely Lagrangian Stochastic (LS) Model, to generate the trajectory analysis.

- Unlike Eulerian methods, LS methods do not have any artificial numerical diffusion, thus allowing the modeler to better resolve the spatial scales of the flow field.

Objectives:

1. Develop a Lagrangian Stochastic Model (or modify an existing one) to simulate oil spill trajectories.

2. Conduct sensitivity tests and validation of modeled trajectories.

3. Demonstrate its application to the Gulf of Mexico

Importance to BOEM:

- To improve the process of simulating the advection and dispersion of the oil spill via the Lagrangian Stochastic Modeling. The LS technique has been demonstrated to help reducing the error of the modeled particle trajectories in the costal ocean.

Current Status: The contract was awarded on 9/26/2011. The contractor has completed the classification of the relative dispersion regimes at different test beds of the Gulf of Mexico, using the current field simulated from Hybrid Coordinate Ocean Model (HYCOM) at $1/25^{o}$ resolution.

Final Report Due: September 25, 2013

Publications:

Affiliated Web Sites:

Revised Date: May 7, 2012

ESPIS: Environmental Studies Program Information System
All *completed* ESP studies can be found here:
http://www.data.boem.gov/homepg/data_center/other/espis/espisfront.asp